Billing Code: 3510-7

DEPARTMENT OF COMMERCE

Office of the Secretary

RIN 0690-ZA03

Request for Information on Commercial Capabilities in Space Situational Awareness Data

and Space Traffic Management Services

AGENCY: Office of Space Commerce, U.S. Department of Commerce, National Oceanic and

Atmospheric Administration.

**ACTION:** Notice and request for comments.

SUMMARY: The U.S. Department of Commerce (Department), via the Office of Space

Commerce, seeks information from interested parties on: specific capabilities commercial

entities might currently and in the future provide through an open architecture data repository to

the public to enhance the space situational awareness (SSA) data and the space traffic

management (STM) services the U.S. government currently provides; SSA, STM, and orbital

debris mitigation best practices; and perspectives on the appropriate regulatory structures the

Department should adopt to drive the development and responsible use of such SSA and STM

enhancements in order to protect national interests and further encourage U.S. commercial space

investment.

**DATES:** Submit written comments on or before [insert date 30 days after the date of publication

in the *Federal Register*].

ADDRESSES: The public may submit written comments on issues addressed in this Notice by

either of the following methods:

1

- Electronic Submission: Submit all electronic public comments via the Federal e-Rulemaking Portal. Go to www.regulations.gov/#!docketDetail;D=DOC-2019-0001, click the "Comment Now!" icon, complete the required fields, and enter or attach your comments.
- Mail: Submit written comments to Patrick Sullivan, U.S. Department of Commerce, 1401
   Constitution Avenue, NW, Room 53027, Washington, DC 20230.

Instructions: Comments must be submitted by one of the above methods to ensure that the comments are received, documented, and considered by the Department. Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered. All comments received are a part of the public record and will generally be posted for public viewing on www.regulations.gov without change. All personal identifying information (e.g., name, address) submitted voluntarily by the sender will be publicly accessible. Do not submit confidential business information, or otherwise sensitive or protected information. The Department will accept anonymous comments (enter "N/A" in the required fields if you wish to remain anonymous).

FOR FURTHER INFORMATION CONTACT: Patrick Sullivan, Office of Space

Commerce, U.S. Department of Commerce, 1401 Constitution Avenue, NW, Room 53027,

Washington, DC 20230; Psullivan@doc.gov; (202) 482-6167. Please direct media inquiries to

Office of Public Affairs; via email to:publicaffairs@doc.gov.

#### SUPPLEMENTARY INFORMATION:

#### T. Leveraging Commercial Innovation to Enhance Existing Federal SSA/STM Data.

The President and the Secretary of Commerce (Secretary) have taken significant steps to ensure that the U.S. continues to lead the world in innovation and economic prosperity from space operations, research, and communications. On February 21, 2018, in accordance with prior law and practice, the National Space Council recommended that the President make the Department of Commerce (Department) responsible for a variety of commercial space regulatory functions.<sup>1</sup> Similarly, the President recognized that the U.S. "must set priorities for space situational awareness (SSA) and [space traffic management (STM)] innovation in science and technology (S&T), incorporate national security considerations, encourage growth of the U.S. commercial space sector, establish an updated STM architecture, and promote space safety standards and best practices across the international community" and placed responsibility for addressing commercial SSA and STM services upon the Department.<sup>2</sup> Nongovernmental SSA solutions are being developed that could significantly improve, beyond the current provisioning of SSA data and limited STM services by the Federal government, the ability to detect and characterize space objects and these improvements could further enhance integration of SSA and STM cooperation between US government and non-governmental space operators.

Reflective of these commercial innovations, on June 18, 2018, the President issued Space Policy Directive-3, the National Space Traffic Management Policy (SPD-3), charging the Department to

<sup>&</sup>lt;sup>1</sup> See Record of Decision, National Space Council, NSpC ROD-2018-01 (Feb. 21, 2018), 5.

<sup>&</sup>lt;sup>2</sup> See Space Policy Directive-3, National Space Traffic Management Policy, 83 FR 28969 (Jun. 21, 2018) (SPD-3).

take significant actions regarding commercial SSA and STM services.<sup>3</sup> While recognizing that U.S. citizens, businesses, and national interests depend heavily on space technologies and space-based capabilities, the President made clear that the increasing congestion in space threatens both current uses of space and future investments to grow the space economy.<sup>4</sup> For the purposes of this RFI, both SSA and STM are defined in Section 2 of SPD-3.<sup>5</sup>

The President acknowledged the critical existing SSA and STM function the Department of Defense currently provides: "Already, the Department of Defense (DoD) tracks over 20,000 objects in space, and that number will increase dramatically as new, more capable sensors come online and are able to detect smaller objects. DoD publishes a catalog of space objects and makes notifications of potential conjunctions (that is, two or more objects coming together at the same or nearly the same point in time and space)." The President stated that, pursuant to 10 U.S.C. 2274, a basic level of SSA data in the form of the publicly releasable portion of the DoD catalog is, and should continue to be, provided free of direct user fees. The President directed the Secretary and the Secretary of Defense, in coordination with the Secretary of State and the Secretary of Transportation, the NASA Administrator, and the Director of National Intelligence, to develop a plan for providing basic SSA data and basic STM services either directly or through a partnership with industry or academia.

<sup>&</sup>lt;sup>3</sup> See id.

<sup>&</sup>lt;sup>4</sup> See id. at 28969.

<sup>&</sup>lt;sup>5</sup> See id. at 28970 (defining SSA as "the knowledge and characterization of space objects and their operational environment to support safe, stable, and sustainable space activities" and STM as the planning, coordination, and on-orbit synchronization of activities to enhance the safety, stability, and sustainability of operations in the space environment."

<sup>&</sup>lt;sup>6</sup> See id. at 28969.

<sup>&</sup>lt;sup>7</sup> See id.

<sup>&</sup>lt;sup>8</sup> Id. at 28975.

However, the President cautioned that the bounds of current Federal capabilities are tested by the dramatic increase in commercial space activity: "As the number of space objects increases, however, this limited traffic management activity and architecture will become inadequate. At the same time, the contested nature of space is increasing the demand for DoD focus on protecting and defending U.S. space assets and interest." The President also emphasized the need to partner with private industry to "develop a new approach to [STM] that addresses current and future operational risks" and "set priorities for [SSA] and STM innovation in science and technology (S&T), incorporate national security considerations, encourage growth of the U.S. commercial space sector, establish an updated STM architecture, and promote space safety standards and best practices across the international community."

The President specifically noted the promise commercial innovation holds for enhanced SSA and STM: "As additional sources of space tracking data become available, the United States has the opportunity to incorporate civil, commercial, international, and other available data to allow users to enhance and refine this service." To realize this promise, the President directed the Department and other Federal agencies to develop a number of initiatives that will leverage publicly available SSA and STM data, spur commercial development and use of enhanced SSA/STM data, and develop procedures and regulations, if necessary, to protect national security and U.S commercial assets in space. The President established the following goals that the Department and other agencies must realize pursuant to his directive:

a) Advance SSA and STM Science and Technology (S&T);

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<sup>&</sup>lt;sup>9</sup> Id.at 28969.

 $<sup>10 \</sup>text{ Id}$ 

<sup>&</sup>lt;sup>11</sup> Id. at 28972.

- b) Mitigate the effect of orbital debris on space activities;
- c) Encourage and facilitate U.S. commercial leadership in S&T, SSA, and STM;
- d) Provide U.S. government-supported basic SSA data and basic STM services to the public;
- e) Develop STM standards and best practices;
- f) Prevent unintentional radio frequency (RF) interference;
- g) Improve the U.S. domestic space object registry; and
- h) Develop policies and regulations for future U.S. orbital operations. 12

In order to meet the goals related to leveraging non-governmental SSA and STM capabilities, the Department issues this Notice seeking stakeholder insight. The insight obtained from this Notice will drive the Department's efforts to make basic and enhanced SSA data and STM services available to the public and develop standards for responsible commercial use of STM and SSA data to protect national security and commercial space investments.

## II. Request for Comment

## A. Commercial Enhanced SSA/STM Capabilities.

The President required the Department to develop the standards and protocols for creation of an open architecture SSA/STM data repository to facilitate greater data sharing with satellite operators and enable the commercial development of enhanced space safety services. The repository must include:

- 1) Data integrity measures to ensure data accuracy and availability;
- 2) Data standards to ensure sufficient quality from diverse sources;

<sup>&</sup>lt;sup>12</sup> See id. at 28973.

- Measures to safeguard proprietary or sensitive data, including national security information;
- 4) The inclusion of satellite owner-operator ephemerides to inform orbital location and planned maneuvers; and
- 5) Standardized formats to enable development of applications to leverage the data.<sup>13</sup> To facilitate the development of this open architecture data repository, the Department seeks public input on key aspects of current and future non-governmental SSA and STM products, technologies, and approaches that will enhance current publicly available SSA data and STM services. Specifically, the Department seeks information on:
  - 1) In the context of SPD-3<sup>14</sup>, what specific capabilities could commercial entities currently provide through an open architecture data repository to enhance the limited STM services and SSA data the U.S. government provides to the public? These capabilities can include, but not are not limited to, developments in sensing, analytics, visualization, data sharing, and data management.
  - 2) How will those commercial capabilities, servicing both government-sponsored and non-government-sponsored activities change in the next 10 years, and what emerging commercial capabilities will develop in that time?
  - 3) What attributes of an open architecture STM/SSA data repository are essential to providing accurate data to mitigate risk of collision and enable SSA and STM services?

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<sup>&</sup>lt;sup>13</sup> See id.

<sup>&</sup>lt;sup>14</sup> The Department acknowledges that, in 2016, the Federal Aviation Administration (FAA) released a report on commercial STM and SSA data, titled: "Evaluating Options for Civil Space Situational Awareness (SSA)". The report can be found at https://www.ida.org/idamedia/Corporate/Files/Publications/STPIPubs/2016/P-8038.pdf. The Department appreciates the FAA's work on this report and will collaborate further with the FAA to complement stakeholder's input into this inquiry with this report's relevant findings.

- 4) What service-oriented open architecture data repository models and examples should guide the Department as it develops the open architecture SSA/STM data repository? These models and examples should highlight maximum use and exploration across sensitive, multidimensional data sources and tools while protecting any sensitivity of these data.
- 5) What STM-related incentives, such as regulatory approaches to orbital debris mitigation, will encourage industry to make America their flag of choice for commercial space activities?
- 6) What actions will strengthen partnerships in effective development of SSA and STM services?

# B. STM, SSA, and orbital debris mitigation best practices.

The President made clear that, alone, the SSA/STM open architecture data repository will not sufficiently protect U.S. national and commercial interests in space; minimum safety standards and best practices must be adopted in the United States and globally to utilize SSA/STM data to mitigate risk of collisionand address the growing orbital debris issue threatening current and future space operation. The President directed the Department to lead a global effort to develop minimum safety standards and best practices that promote safe and responsible behavior in space. Already, the Department is considering national and international activities, such as those under development in the International Organization for Standardization (ISO) and the Consultative Committee for Space Data Systems (CCSDS).

To develop these space traffic standards and best practices, the Department seeks information on:

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<sup>&</sup>lt;sup>15</sup> See id. at 28970.

- 1) In the context of enhanced SSA/STM data, what best practices, technical guidelines, minimum safety standards, behavioral norms, and orbital deconfliction protocols should be adopted by the United States? Of these, are there any that should only be adopted in the United States if they are also adopted globally? If globally, what is the appropriate forum for such adoption?
- 2) What pre-launch and on-orbit collision avoidance support services or technologies exist that will mitigate risk of collision, and improve situational awareness, and how should they be incorporated into best practices?
- 3) What U.S. actions might incentivize global adherence to SSA/STM standards and compliance with space treaty obligations?
- 4) What research methods for tracking whether international commercial entities are implementing such standards and best practices will assist in facilitating global adoption of a standards set of SSA/STM best practices?

C. Appropriate SSA/STM-Related Regulations to Spur U.S. Space Commerce In coalescing his SSA/STM directives into specific agency actions, the President required the Secretaries of Defense, Commerce, and Transportation, in coordination with the Secretary of State, the NASA Administrator, and the Director of National Intelligence, to regularly evaluate emerging trends in space missions and recommend revisions, as appropriate and necessary, to existing SSA and STM policies and regulations. <sup>16</sup>

<sup>&</sup>lt;sup>16</sup> See id. at 28976.

The Department is actively engaged internally and in coordination with other agencies to assess how existing regulations related to STA/SSM and orbital debris mitigation are working and what changes are needed to implement the President's Space Policy Directives. To further inform Department regarding the policies or regulations needed to protect Federal and commercial space interests and enable significant growth in U.S. space commerce investment, the Department seeks information on:

- 1) What existing policies and regulations, across agencies, positively and negatively enhance SSA/STM use and related orbital debris mitigation?<sup>17</sup>
- 2) How do such existing policies and regulations encourage U.S. and allied space commerce investment, and how should they be revised?
- 3) What emerging trends in space missions and proposed commercial spaceflight activity, including spacecraft safety standards, protection requirements, satellite tracking standards, and satellite control standards, impact existing and future SSA and STM policies and regulations? How should these trends drive revision to those policies and regulations?
- 4) How can the proper regulatory environment drive a space activity insurance market that encourages investment?
- 5) What, if anything, should the Federal government do to encourage insurance parameters for space activities that will encourage responsible space activities and make the U.S. the flag of choice for leading space innovators?

10

<sup>&</sup>lt;sup>17</sup> To the extent commenters discuss any existing or proposed regulations of another agency, the Department will provide those comments to the agency referenced.

- 6) Are there any other policies or regulations that the Department should consider in the context of SSA, STM, and orbital debris mitigation in order to promote the United States as the flag of choice for space commerce?
- 7) What specific capabilities and technologies could commercial entities provide to characterize the small, millimeter-sized orbital debris population to improve the orbital debris impact risk assessments to support the development and implementation of cost-effective protective measures for the safe operations of future space missions?

### III. Request for Public Comment and Ex Parte Communications

The Department invites public comment on any and all issues identified in this Notice. Any non-public oral presentation to the Department regarding the substance of this Notice will be considered an ex parte presentation, and the substance of the meeting will be placed on the public record and become part of this docket. No later than two (2) business days after an oral presentation or meeting, an interested party must submit a memorandum to OSC summarizing the substance of the communication and attaching any documents presented in the meeting. The Department reserves the right to supplement the memorandum with additional information as necessary, or to request that the party making the filing do so, if the Department believes that important information was omitted or characterized incorrectly. Any written presentation provided in support of the oral communication or meeting will also be placed on the public record and become part of this docket. Such ex parte communications must be submitted to this docket as provided in the ADDRESSES section above and clearly labeled as an ex parte presentation. Federal entities are not subject to these procedures.

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Kevin O'Connell,
Director,
Office of Space Commerce,
U.S. Department of Commerce.

[FR Doc. 2019-07169 Filed: 4/8/2019 11:15 am; Publication Date: 4/11/2019]